

## AUTOMATED OVERLAY METROLOGY SYSTEM

## ABSTRACT OF THE DISCLOSURE

Non-imaging measurement is made of  
misalignment of lithographic exposures by  
illuminating periodic features of a mark formed by  
two lithographic exposures with broadband light  
5 and detecting an interference pattern at different  
wavelengths using a specular spectroscopic  
scatterometer including a wavelength dispersive  
detector. Misalignment can be discriminated by  
inspection of a spectral response curve and by  
10 comparison with stored spectral response curves  
that may be empirical data or derived by  
simulation. Determination of best fit to a stored  
spectral curve, preferably using an optimization  
technique can be used to quantify the detected  
15 misalignment. Such a measurement may be made on-  
line or in-line in a short time while avoiding  
tool induced shift, contact with the mark or use  
of a tool requiring high vacuum.

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